

A Description of the Larva of *Hydrobiomorpha casta* (Coleoptera: Hydrophilidae)

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ABSTRACT

The larva of *Hydrobiomorpha casta* (Say) is described and illustrated, the synonymies of the species is updated, and a key to the larvae of the genera assigned to the subfamily Hydrophilinae is provided.

The subfamily Hydrophilinae consists of the following six genera: *Dibolocelus*, *Hydrobiomorpha*, *Hydrochara*, *Hydrophilus*, *Sternolophus*, and *Tropisternus*. The larvae of *Hydrochara*, *Hydrophilus*, *Sternolophus*, and *Tropisternus* have been fully described and that of *Dibolocelus* remains undescribed. Bertrand (1962) briefly characterized the larva of *Neohydrophilus* sp. (now *Hydrobiomorpha fide* Mouchamps, 1959) and also included *Neohydrophilus* in his key to the larvae of the genera of Hydrophilidae of the world (Bertrand, 1972).

A full description of the larva of *Hydrobiomorpha casta* (Say) and a key to the larvae of the genera of the Hydrophilinae are presented in this paper. In addition, updated synonymies are given for *H. casta* because as the citations in the synonymy indicate some of the past transfers as well as the current assignment of *casta* to *Hydrobiomorpha* have been overlooked.

Hydrobiomorpha casta (Say)

- Hydrophilus castus* Say, 1835: 170; type-locality: "Inhabits Louisiana"; type destroyed.—Leng, 1920: 84.—Löding, 1945: 30.—Blackwelder and Blackwelder, 1948: 5.
Hydrocharis castus.—Horn, 1876: 251.—Schwarz, 1878: 439.—Horn, 1895: 233.—Leng and Mutchler, 1918: 103.—Blatchley, 1919: 320.
Hydrophilus (*Neohydrophilus*) *castus*.—d'Orchymont, 1911: 62.
Neohydrophilus castus.—Knisch, 1924: 234.—

- d'Orchymont, 1928: 167; 1929: 1026.—Young, 1954: 193.—Arnett, 1961: 221.
Hydrobiomorpha casta.—Mouchamps, 1959: 328.—Richmond, 1962: 88.
Hydrocharis obtusatus (Say).—LeConte, 1855: 369 (in part).
Hydrous tenebrioides Jacquelin DuVal, 1856: 50.
Hydrocharis perfectus Sharp, 1882: 61.

The genus *Hydrobiomorpha* is essentially pantropical in distribution, and it presently includes 32 species plus 10 subspecies. The only species of *Hydrobiomorpha* found in the United States is *H. casta*, which occurs from Florida to Louisiana and in Cuba, Mexico, Guatemala, and Panama. Because *H. casta* is the only representative of the genus in the United States, larvae collected with adults may be confidently identified to genus and species by association, by size, and by elimination of known hydrophilid larvae. The larva (Fig. 1) described below was identified in this manner.

Third-instar Larva.—Length, 21.0 mm; greatest width of pronotum, 2.8 mm. Color of sclerotized portions of head, thorax, legs, and sclerite on stigmatic atrium reddish brown to dark reddish brown. Integument lightly infuscate and densely covered with fine pubescence.

Head rectangular; 2.3 mm wide; 2.0 mm from labroclypeus to occipital foramen. Frontoclypeal suture distinctly impressed. Ecdysial cleavage line present and forked near base; frontal arms diverging and extending to bases of antennae. Frons sagittate. Cervical sclerites present, subrectangular. Ventral surface of head with few setae laterally, glabrous

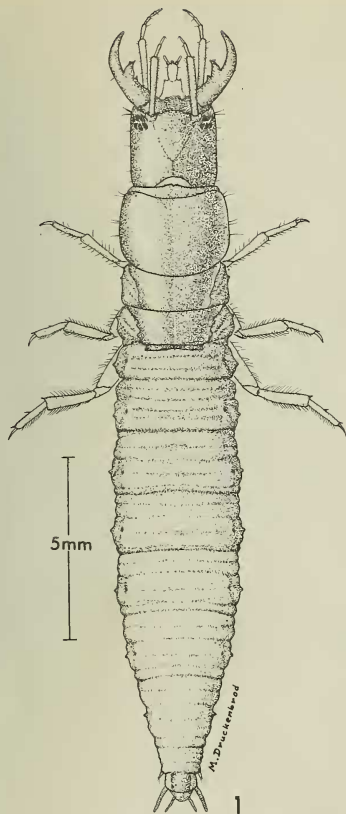


Fig. 1, *Hydrobiomorpha casta* (Say), larva, habitus.

medially; gula roughly pentagonal, rounded posteriorly; 2 tentorial pits behind gula, 1 on each side of midline. Labroclypeus asymmetrical (Fig. 2), left side shortest; with 5 poorly defined teeth, each separated by a short stout seta. Anterolateral angles of epistoma rounded, projecting beyond longest labroclypeal teeth, each with 2 stout setae on anterolateral margins, finely serrulate on medial margins, separated from labroclypeal teeth by a single stout seta. Ocular areas each with 6 ocelli arranged in an ellipse. Ocelli in 2 rows, anterior row with 4 ocelli and posterior row with 2 ocelli; middle pair of

ocelli of anterior row largest, lowest ocelli smallest, other ocelli subequal.

Antenna as long as mandibles, subcylindrical, 3 segmented; basal segment slightly more than 3 times as long as ultimate and penultimate segments combined and densely pubescent as illustrated (Fig. 3); penultimate segment about a third longer than ultimate segment, with 1 long hair on anterolateral angle; ultimate segment slender, with 2 stout short setae and 2 long slender setae on apex.

Mandibles (Fig. 4) symmetrical, prominent, stout, sharply tapered apically. Each mandible with 1 large distal tooth and 1 small proximal denticle. Molar area relatively smooth and rounded except for a minute stubby process immediately below basal denticle.

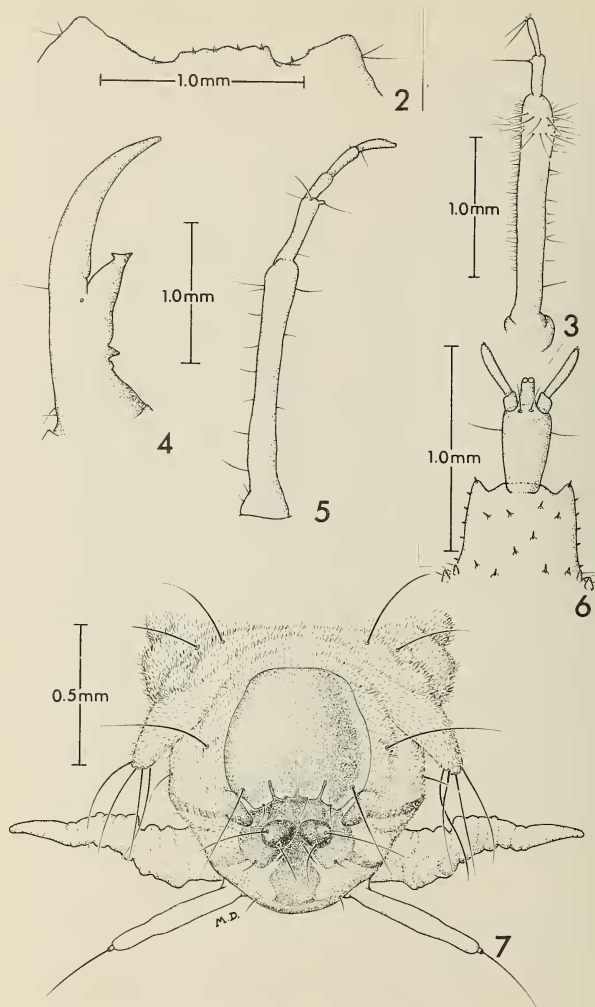
Maxilla (Fig. 5) with stipes slender, elongate, constricted medially, with setae as illustrated. Palpifer as long as 1st and 2nd segments of palpus combined, with slender sclerotized appendage on inner side and bearing a long terminal seta. Palpal segments 1 and 2 slightly swollen distally; 1st segment shortest, penultimate and ultimate segments subequal; ultimate segment tapering sharply, with small slender basal seta.

Labium (Fig. 6) with palpi extending slightly beyond large mandibular tooth. Penultimate segment of labial palpus short; ultimate segment about 5 times as long as penultimate segment, bearing 3 short stout setae on apex. Ligula distinct, twice as long as penultimate segment of labial palpus, shallowly bilobate on apex. Palpiger rectangular; dorsally with 2 setae arising medially near base of ligula and ventrally with 2 elongate slender setae arising anterolaterally behind bases of palpi. Mentum slightly more than twice as wide as palpiger, diverging posteriorly; anterolateral angles prominent and each with a single seta on apex; dorsal surface with numerous setae as illustrated (Fig. 6); posterolateral angles with 2 small denticles.

Pronotum broader than long, with sides gently rounded, slightly wider posteriorly, bearing 4 or 5 long slender setae at anterolateral angle and 5 or 6 posteriorly. Sagittal line present. Prosternal sclerite broader than long; with a few long slender setae at anterolateral angles and along midline. Mesonotum slightly wider than pronotum but only half as long; with 1 large trapezoidal sclerite; sagittal line present. Metanotum slightly wider than mesonotum and about as long; with 1 large trapezoidal sclerite; sagittal line present.

Legs 4-segmented, slightly longer than width of prosternal sclerite. Coxae robust, slightly shorter than trochanter and femur combined. Trochanter about half as long as coxa. Femur slightly longer than tibiotarsus. Tarsal claw single, with 2 short stout setae ventrally near base.

Abdomen of 8 distinct segments and 9th and 10th segments reduced. Segment 1 with a single, strap-like sclerite anteriorly. Abdominal segments 2 through 7 without sclerites and separated by an intersegmental membrane; 8th segment with dorsal sclerite. True segmentation obscured by additional transverse folds on segments; segmental folds con-



FIGS. 2-6, *Hydrobiomorpha casta* (Say), larva: 2, labroclypeus, dv; 3, antenna, dv; 4, mandible, vv; 5, maxilla, vv; 6, labium, dv; 7, stigmatic atrium, dv. (dv = dorsal view; vv = ventral view.)

tinued onto sternum. 1st segment with 2 folds; remaining segments with 4 folds. Segments 1 through 7 with 8 setose tubercles, 4 dorsal and 2 on each lateral margin on first fold behind the fold bearing spiracle. Several small blunt setae present on all tubercles. In addition to tubercles discussed above, a large spiracular tubercle present near anterolateral angle of segments 1 through 7. Epipleurites and hypopleurites prominently lobed. 8th tergum represented by superior valve of stigmatic atrium (Fig. 7), a small trapezoidal sclerite; narrow basally, widening apically and apex divided into 4 truncate processes; each process bearing a short apical seta; each lateral process also bearing a long slender basolateral seta. 9th tergum rounded apically, with 3 sclerites; middle sclerite narrow basally, expanded medially and narrowing again apically, with short seta at posterolateral corners; lateral sclerites smaller and narrower, each bearing a seta on apex. Spiracular openings of lateral tracheal trunks present in atrium. Mesocerci prominent, conical, each bearing 3 setae. Procerci present beside posterolateral angles of sclerite of 8th tergum. Paracerci present, very elongate, gill-like, bearing a long slender seta on apex.

The larva described and illustrated in this paper was collected from Alabama, Bibb County, Payne Lake near Brent, on 2 July 1963 by P. J. Spangler.

Acknowledgment

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prepared the illustrations of the larva of *H. casta* for this paper.

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Key to the Larvae of the Genera of the Subfamily Hydrophilinae

1. Head subspherical; mandibles not symmetrical; left mandible very robust; right mandible much more slender than left mandible; ligula not longer than 1st segment of palpus; lateral abdominal gills absent; pronotum not entirely sclerotized *Hydrophilus* (*Dibolocelus*?)
 Head subquadrangular or subrectangular; mandibles symmetrical or not; ligula distinctly longer than 1st palpal segment; lateral gills present or absent; pronotum entirely sclerotized 2
2. Mentum convex towards basal half, anterolateral angles less prominent; lateral abdominal gills well developed and pubescent *Hydrochara*
 Mentum with sides almost straight, anterolateral angles very prominent; lateral abdominal gills rudimentary but indicated by tubercular projections, each with several terminal setae 3
3. Mandibles each with 2 large distal teeth and 1 small proximal denticle; apex of ligula shallowly bifid *Sternolophus*
 Mandibles each with 1 large distal tooth and 1 or 2 small proximal denticles; apex of ligula bifid or not 4
4. Mesonotal and metanotal sclerites much reduced, triangular, hind margins very narrow, almost pedunculate; apex of ligula not bifid; lateral abdominal gills of 9th segment short, inconspicuous; acrocerci small, inconspicuous *Tropisternus*
 Mesonotal and metanotal sclerites not much reduced, trapezoidal, hind margins almost as wide as anterior margin; apex of ligula shallowly bifid; lateral abdominal gills of 9th segment very long, conspicuous; acrocerci distinctly elongate, gill-like *Hydrobiomorpha*

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